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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,613	12/05/2003	Takeshi Ikeda	09792909-5748	2535

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EXAMINER	
BELLO, AGUSTIN	
ART UNIT	**PAPER NUMBER**
2613	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/728,613	IKEDA, TAKESHI	
	Examiner	Art Unit	
	Agustin Bello	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1. The indicated allowability of claims 5 and 6-12 is withdrawn in view of the newly discovered reference(s) to Jokerst. Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-2 and 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (U.S. Patent No. 6,527,457) in view of Jokerst (U.S. Patent No. 6,721,503).

Regarding claims 1 and 5, Chan teaches a light emitting element (reference numeral 10 in Figure 2) for converting an electric signal into an optical signal; and a light receiving element (reference numeral 12 in Figure 2) for converting an optical signal into an electric signal for carrying out a single-wire two-way communication by using an optical fiber (reference numeral 6 in Figure 2), comprising:; an optical integrated chip (reference numeral 4 in Figure 2) in which said light emitting element and said light receiving element are formed on the same chip, and a light emitting section of said light emitting element and a light receiving section of said light receiving element are closely placed; and a circuit board (reference numeral 8 in Figure 2) where a via hole for inserting said optical fiber is formed wherein said optical integrated chip is mounted on one surface of said circuit board at a position where said light emitting section and

said light receiving section are fitted into said via hole (column 3 lines 55-64), and said optical fiber is inserted into said via hole to fix from the other surface of said circuit board (reference numeral 6, 8 in Figure 2). Chan differs from the claimed invention in that Chan fails to specifically teach that said light emitting section and said light receiving section are placed at a distance at which a part of each section is fitted in a diameter portion of a core transversal cross-section of said optical fiber. However, Jokerst teaches that this concept is well known in the art (Figure 1A). One skilled in the art would have been motivated to place the light emitting section and the light receiving section at a distance at which a part of each section is fitted in a diameter portion of a core transversal cross-section of said optical fiber in order to facilitate bi-directional communication with a single fiber (abstract of Jokerst). Furthermore, Chan discloses that any type of optical chip could be used, thereby suggesting the use of Jokerst's optical chip (column 5 lines 28-36). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to use the optical chip taught by Jokerst as the optical chip in the device of Chan.

Regarding claim 2, Chan teaches that an electrode pad to be connected to said optical integrated chip is placed on one surface of said circuit board (column 6 lines 42-48), and said optical integrated chip is mounted on said circuit board by flip-chip mounting (column 6 lines 28-35).

Regarding claim 4, Chan teaches a circuit for driving said optical integrated chip is formed on said circuit board (column 6 lines 42-48).

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (U.S. Patent No. 6,527,457) in view of Jokerst (U.S. Patent No. 6,721,503), as applied to claim 1 above, and further in view of Nishii (U.S. Patent Application Publication No. 2002/0157862).

Regarding claim 3, the combination of Chan and Jokerst differs from the claimed invention in that it fails to specifically teach that said via holes are formed by laser beam machining. However, Nishii teaches that this concept is well known in the art (Figure 4B). One skilled in the art would have been motivated to form said via holes by laser beam machining in order to form a through hole at higher speed and higher degree of definition (paragraph [0003]). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to form said via holes by laser beam machining in the device of the combination of Chan and Jokerst.

5. Claims 6-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (U.S. Patent No. 6,527,457) in view of Jokerst (U.S. Patent No. 6,721,503), as applied to claim 1 above, and further in view of Forrest (U.S. Patent No. 4,493,113).

Regarding claims 6 and 12, the combination of Chan and Jokerst teach the common limitations recited in this claim and claim 1. The combination of Chan and Jokerst differs from the claimed invention in that it fails to specifically teach an optical component for separating an optical path from said light emitting section and an optical path to said light receiving section wherein said optical component is placed inside said via hole between said optical integrated chip and said optical fiber, and a first waveguide through which a transmitting light is passed and a second waveguide through which a receiving light is passed are formed between said light emitting section and said light receiving section and an end surface of said optical fiber.

However, Forrest teaches that this concept is well known in the art (Figure 1). One skilled in the art would have been motivated to include an optical component for separating an optical path from said light emitting section and an optical path to said light receiving section wherein said optical component is placed inside said via hole between said optical integrated chip and said optical fiber, and a first waveguide through which a transmitting light is passed and a second waveguide through which a receiving light is passed are formed between said light emitting section and said light receiving section and an end surface of said optical fiber in order to separate the transmitted radiation from the received radiation (column 4 lines 1-10). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to include an optical component for separating an optical path from said light emitting section and an optical path to said light receiving section wherein said optical component is placed inside said via hole between said optical integrated chip and said optical fiber, and a first waveguide through which a transmitting light is passed and a second waveguide through which a receiving light is passed are formed between said light emitting section and said light receiving section and an end surface of said optical fiber.

Regarding claims 7-8, the combination of references teaches that said optical component is a fiber (reference numeral 30 in Figure 1) in which a periphery of an inner layer section (i.e. the core) is covered by an outer layer section whose refractive index is different (e.g. the outer layer of fiber 30 seen in Figure 1), and this outer layer section is covered by a total reflection film (inherent in the total internal reflection shown within fiber 30 in Figure 1), and said first waveguide is formed such that said inner layer section is opposite to said light emitting section,

and said second waveguide is formed such that said outer layer section is opposite to said light receiving section (as seen in Figure 1).

Regarding claim 9, Chan teaches that an electrode pad to be connected to said optical integrated chip is placed on one surface of said circuit board (column 6 lines 42-48), and said optical integrated chip is mounted on said circuit board by flip-chip mounting (column 6 lines 28-35).

Regarding claim 11, Chan teaches a circuit for driving said optical integrated chip is formed on said circuit board (column 6 lines 42-48).

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (U.S. Patent No. 6,527,457) in view of Jokerst (U.S. Patent No. 6,721,503) and Forrest, as applied to claim 6 above, and further in view of Nishii (U.S. Patent Application Publication No. 2002/0157862).

Regarding claim 10, the combination of Chan, Jokerst, and Forrest differs from the claimed invention in that it fails to specifically teach that said via holes are formed by laser beam machining. However, Nishii teaches that this concept is well known in the art (Figure 4B). One skilled in the art would have been motivated to form said via holes by laser beam machining in order to form a through hole at higher speed and higher degree of definition (paragraph [0003]). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to form said via holes by laser beam machining in the device of the combination of Chan, Jokerst, and Forrest.

Response to Arguments

7. Applicant's arguments filed 8/6/07 have been fully considered but they are not persuasive. As noted above, the examiner maintains that a part of each of the transmitter and receiver section is fitted in a diameter portion of a core transversal cross-section of the fiber.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Agustin Bello whose telephone number is (571) 272-3026. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Agustin Bello
Primary Examiner
Art Unit 2613

AB